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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/600,831	07/21/2000	TERENCE JAMES DAVEY	5017-5179	2071

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ST LOUIS, MO 63101

EXAMINER

PIAZZA CORCORAN, GLADYS JOSEFINA

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 08/28/2002

10

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/600,831

Applicant(s)

DAVEY, TERENCE JAMES

Examiner

Gladys J Piazza Corcoran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13, 16, 19-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16, 19-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**FINAL ACTION**

***Specification***

1. The disclosure is objected to because of the following informalities: The Amendment to the specification for page 10, fourth paragraph, line 2 recites, "However the method **os** more." It is suggested to amend to --is--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-13, 16, 19-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

a. Claims 1, 8, 11 recite that the layer of impermeable material is adjacent at least a portion of the surface of the product and that a layer of gas permeable material is in engagement with the portion of the surface of the product. The Specification does disclose that the impermeable material is adjacent the surface of the product in the peripheral area around the impermeable material, however, the specification does not disclose that the impermeable material is adjacent the surface of the product in the same area as the gas permeable material. In fact it would be impossible to have both

the impermeable material and the gas permeable layers to both be adjacent the product in the same area.

**b.** Claims 1, 8, 11, 19, 20 recite that the layer of gas permeable material is in “**engagement**” with the portion of the surface of the product. There is no description in the specification of how the gas permeable material is “**engaged**” with the surface of the product. The specification merely discloses placing the gas permeable material over the surface of the product (it is noted that the gas permeable layer is not even in direct contact with the surface of the product in figure 6). There is no disclosure as to the layer being engaged with the product.

**c.** Claims 1, 3-6, 10, 19, 20, 22-24 recite removing “**fluid**” from the product. The specification only recites removing gas and vapor from the product (page 2, lines 30-35). There is no disclosure in the specification for removing “**fluid**” from the product.

**d.** Claim 7 recites that the product is a composite molding of glass fiber and “**at least partially**” cured polyester resin. The specification does disclose that the product is a composite molding of glass fiber and polyester resin, however the specification does not disclose that the resin is “**at least partially cured**”.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-9, 11-13, 16, 19-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 1, 8, 11 recite that the layer of impermeable material is adjacent at least a portion of the surface of the product and that a layer of gas permeable material is in engagement with the portion of the surface of the product. It is unclear how both the layers can be adjacent or in engagement with the same portion of the surface of the product. Clarification is required.

6. Claim 1, 8, 11, 19, 20 recites that the layer of gas permeable material is in **engagement** with the portion of the surface of the product. It is unclear as to what is the scope of the limitation of the layer being in "**engagement**". There is no definition in the specification as to the term "**engagement**" and one of ordinary skill in the art would not be apprised to the scope of the limitation. Clarification is required.

7. Claim 20 recites "A kit for treating a glass fibre reinforced boat hull." It is unclear whether Applicant intends the boat hull to be part of the kit. Weight is not given to the material worked upon in Apparatus claims (see MPEP § 2115). The material worked upon can be included in a kit claim, however, currently claim 20 does not include the boat hull as an item in the kit. Clarification is required.

***Claim Rejections - 35 USC § 102***

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1, 4, 11-12, 16, 20, 21, 22 are rejected under 35 U.S.C. 102(b) as being anticipated by McBroom et al. (EP 0,839,635 A1).

As to claim 1, McBroom discloses a method of treating a product with a surface formed by a method of curing or drying a liquid applied to the product (fiber reinforced

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plastic composite; column 1 lines 1-45), by positioning a layer of impermeable material adjacent a portion of the product (sheet of airtight material/vacuum bag 29), positioning a layer of gas permeable material in engagement with the portion of the surface of the product in a space between the layer of impermeable material and the surface of the product (porous breather cloth 32, perforated non-stick bleed film 33, protective film and patch with apertures), applying heat within the space (column 1, lines 40-45), and removing fluid from the product by creating a partial vacuum, in communication with all the surface of the product engaged with the permeable material, by reducing pressure within the space (column 8, lines 24-50).

As to claim 4, McBroom discloses the space is connected to a tube which is connected to a vacuum source which is considered to meet the limitation of a vacuum pump (column 8, lines 13-17).

As to claim 11, McBroom discloses a product with a surface (fiber reinforced plastic composite; column 1 lines 1-45), a layer of impermeable material positioned adjacent the product (sheet of airtight material/vacuum bag 29), a layer of gas permeable material in engagement with the surface of the product in a space between the product and the impermeable layer (porous breather cloth 32, perforated non-stick bleed film 33, protective film and patch with apertures), a heater operatively connected to the space (column 1, lines 40-45), a partial vacuum less than ambient pressure within the space in communication with the entire surface of the product that is in engagement with the layer of gas permeable material (column 8, lines 24-50).

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As to claim 12, McBroom discloses the space is connected to a tube which is connected to a vacuum source which is considered to meet the limitation of a vacuum pump which is considered to be capable of maintaining the vacuum between 2 mb and 5 mb (column 8, lines 13-17).

As to claim 16, even though the impermeable material in McBroom is secured with an adhesive bead to the surface of the product, the impermeable material is fully capable of being secured to the surface of the product solely by the pressure differential.

As to claim 20, McBroom discloses a kit for treating composites with a layer of gas permeable material positioned on the surface of the composite (porous breather cloth 32, perforated non-stick bleed film 33, protective film and patch with apertures), a layer of impermeable material (sheet of airtight material/vacuum bag 29) positioned on the gas permeable material, means for securing the impermeable material to the surface of the composite (a bead of gummy adhesive column 8, lines 13-15), means for applying heat within the space (column 1, lines 40-45), and means for reducing the pressure within the space (column 8, lines 24-50).

As to claim 21, the layers of gas permeable and impermeable materials are sufficiently flexible to be compatible with differing surface contours.

As to claim 22, McBroom discloses removing gaseous fluids from the product (column 8, lines 24-50).

***Claim Rejections - 35 USC § 103***

**10.** The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**11.** Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over McBroom et al. as applied to claim 1 above, and further in view of Wuepper et al. (US Patent No. 5,023,987).

McBroom discloses securing the layer of impermeable material (vacuum bag 29) around its periphery with a bead of gummy adhesive (column 8, lines 13-15). However, it is well known in the art to secure vacuum bags with an adhesive tape as a functionally equivalent alternative to a bead of adhesive. For example, Wuepper discloses a method of treating a surface where the layer of impermeable material (vacuum bag 130) is secured to the surface with a sealing tape around its periphery (column 5, lines 9-11). It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of treating a surface as shown in McBroom by securing the impermeable material layer with an adhesive tape as exemplified in Wuepper since it is a well known functionally equivalent alternative to providing an adhesive bead as shown in McBroom.

**12.** Claims 3 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over McBroom et al. as applied to claim 1 above, and further in view of Wengler et al. (US Patent No. 4,352,707) and/or Mahon et al. (US Patent No. 3,837,965).

McBroom discloses securing the layer of impermeable material (vacuum bag 29) with an air tight seal around its periphery with a bead of gummy adhesive (column 8,



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lines 13-15). However, it is well known in the art to secure impermeable materials (vacuum bags) via the partial vacuum that is applied to the bag. Wengler (column 3, lines 39-41) and/or Mahon (column 3, lines 1-3) both disclose examples of vacuum means where the impermeable material sheet forms an airtight seal via the partial vacuum that is applied. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of treating a surface as shown in McBroom by securing the layer of impermeable material to the surface via the partial vacuum that is applied as exemplified in Wengler and Mahon as it is a well known functionally equivalent alternative to the adhesive bead in McBroom.

**13.** Claims 4, 6, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over McBroom et al. as applied to claim 1 above, and further in view of conventional engineering practice.

As to claims 4 and 12, McBroom discloses the space is connected to a tube which is connected to a vacuum source which is considered to meet the limitation of a vacuum pump and which is considered to be capable of maintaining the vacuum between 2 mb and 5 mb (column 8, lines 13-17). Alternatively, it is considered conventional engineering practice to provide a vacuum bag with a vacuum source that is provided with a vacuum pump. One of ordinary skill in the art at the time of the invention would appreciate using a vacuum pump in order to provide the vacuum source in McBroom, only the expected results would be attained.

As to claim 6, McBroom discloses applying vacuum to the space for a period of an hour (column 8, lines 48-50). As to the particular vacuum range, this is dependent

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only upon the materials used, the amount of heat applied and the length of time applied. It would have been well within the purview of one of ordinary skill in the art at the time of the invention to select the appropriate vacuum levels for the particular materials used, only the expected results would be attained.

**14.** Claims 5, 7, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over McBroom et al. as applied to claim 1 above, and further in view of Leobon (FR 2693147).

As to claim 5, McBroom discloses that vacuum is applied to the space and that heat is applied to the space, however, McBroom does not specifically disclose whether the vacuum or the heat is applied first. It is known in the art of treating a surface of a product with vacuum and heat to begin the step of applying vacuum prior to the step of applying heat. For example, Leobon disclose that the space is depressurized prior to applying the heat (page 11, line 35 to page 12, line 15). Furthermore, it would have been well within the purview of one of ordinary skill in the art to provide the vacuum prior to providing the heat, only the expected results would be attained. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the vacuum prior to the heat in the method of treating a surface as shown in McBroom as is known in the art and exemplified by Leobon and further as it would have been well within the purview of one of ordinary skill in the art.

As to claim 7, McBroom discloses the product is of a fiber reinforced plastic composite for structures including aircraft structures (column 1, lines 1-17). Leobon discloses a similar method of treating products of fiber reinforced plastic composites for

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structures including aircraft structures where the composite comprises of a glass fiber reinforced polyester resin (page 1, line 8 to page 2, line 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the treating method as shown in McBroom to composites comprising well known, conventional materials such as glass fiber and polyester as are known in the same field and exemplified by Leobon. As to the particular temperature ranges that are used to heat the surface of the product, this is dependent only upon the particular materials used, the amount of vacuum applied and the length of time of treatment. It would have been well within the purview of one of ordinary skill in the art at the time of the invention to select the appropriate temperature range so as to be sufficient enough to treat the surface but low enough so as to not damage the materials. Furthermore, McBroom discloses heating to approximately 90°C (column 8, lines 48-50).

As to claim 13, McBroom discloses maintaining the space heated to an appropriate temperature and ensuring that the temperature does not go above 100°C (). However, McBroom does not specifically disclose how to maintain or control that temperature. It is well known in the art of treating a composite product surface to use a thermostat in order to control the temperature of the heat applied with the heater. Leobon discloses an example of a repair assembly for treating a composite product where a thermostat is provided in order to control the temperature of the heat applied to the surface (temperature probe 32, control center 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the assembly as shown in McBroom for applying heat and vacuum to a composite product with a

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thermostat in order to control the temperature of the heat applied as is well known and exemplified by Leobon.

**15.** Claims 8-10, 19, 20, 21, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art in view of McBroom (EP 0,839,635).

The Admitted Prior Art discloses it is known to repair boat hulls formed of glass fiber and polyester composites by removing any damaged portion of the hull and then replacing with a new gel coat (specification page 1, line 1 to page 2, line 18).

It is well known in the composite repair art to remove damaged portions add repair material to the damaged area and then treat the surface with heat and vacuum to cure the damaged area. One example of such a repair of composite materials is shown by McBroom as discussed in the paragraphs above. It would have been obvious to one of ordinary skill in the art at the time of the invention to repair a boat hull of a composite material and a gel coat as shown in the Admitted Prior Art by further providing a vacuum and heat treatment to the surface as is well known in the art of repairing composite materials and exemplified by McBroom, only the expected results would be attained.

As to claim 9, after the repair is completed, the impermeable material and the layer of gas permeable material are removed in McBroom. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply a new layer of gel coat once the area is repaired when repairing a composite of a boat hull as shown in the admitted prior art, only the expected results would be attained.

As to claim 21, the layers of gas permeable and impermeable materials are sufficiently flexible to be compatible with differing surface contours.

As to claims 23 and 24, McBroom discloses removing gaseous fluids from the product (column 8, lines 24-50).

16. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art in view of Leobon (FR 2693147) as set forth in paragraph 9 of the prior Office Action, paper number 6.

***Response to Arguments***

17. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues on page 7 that the purpose of the invention is different than those disclosed in the references, (i.e. a method to treat chemical damage not a method of repairing). Applicant's claims are not currently limited to a method of treating chemical damage and do not exclude the methods and apparatus as shown in the references cited.

Applicant argues on pages 7-9 that claim 1 now include the limitation of a gas permeable material and the references cited in the prior Office Action do not meet this limitation. The newly amended limitation is fully met by the new reference McBroom.

Applicant argues on page 9 that the references cited relate to the aerospace industry and are not applicable to less critical applications. Currently only claims 10 and 19 are limited to boat hull applications. Clearly the other claims are met by the references cited. Furthermore, the references cited pertain to repairing composite materials of many structures. It would have been obvious to one of ordinary skill in the art at the time of the invention to use well known repair methods for the repair of

composite materials in a variety of composite repair applications, including that of the repair of composite material of a boat hull, only the expected results would be attained.

Applicant argues that claim 10 includes the limitation of maintaining a space between the product and the impermeable material. Such limitation is met by McBroom which has porous membranes which form a space and Leobon which has a heated carpet 48 that forms a space.

### ***Conclusion***

**18.** Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

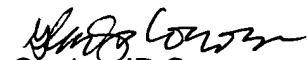
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gladys J Piazza Corcoran whose telephone number is


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(703) 305-1271. The examiner can normally be reached on M-F 8am-5:30pm (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Gladys JP Corcoran  
August 26, 2002

  
Michael W. Ball  
Senior Examiner  
Art Unit 1700